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Dr. Zadeh received his B.S.E.E. from the University of Teheran, Iran, in 1942; S.M.E.E. from the Massachusetts Institute of Technology (MIT), Cambridge, Massachusetts, in 1946; and Ph.D. from Columbia University, New York, New York, in 1949. He has been a professor of electrical engineering and computer sciences at the University of California, Berkeley, California, since 1959. Dr. Zadeh was an instructor in electrical engineering at Columbia University from 1946 to 1950, assistant professor from 1950 to 1953, associate professor from 1953 to 1957, and professor from 1957 to 1959. He has been a member of the Institute for Advanced Study, Princeton, New Jersey, since 1956; was a visiting professor of electrical engineering at MIT in 1962 and 1968; was a visiting scientist at the IBM Research Laboratory in San Jose, California, in 1968, 1973, and 1977; and was a visiting scholar at the Artificial Intelligence Center, SRI International, in Menlo Park, California, in 1981.

DISPOSITIONAL LOGIC AND COMMONSENSE REASONING

Abstract

Dispositional logic (DL) is a branch of fuzzy logic which is concerned with inference from dispositions, or propositions, which are preponderantly, but not necessarily, true. Simple examples of dispositions are: birds can fly, snow is white, and Swedes are blonde. The importance of the concept of a disposition derives from the fact that much of commonsense knowledge may be viewed as a collection of dispositions. Dispositional logic provides an alternative approach to the theories of default reasoning, nonmonotonic reasoning, circumscription, and other widely-used approaches to commonsense reasoning. The premises in DL are assumed to be of the form usually (X is A) or usually (Y is B if X is A), where A and B are fuzzy predicates which play the role of elastic constraints on the variables X and Y . Inference from such premises reduces, in general, to the solution of a nonlinear program. In many cases, an inference rule in DL has the form of a fuzzy syllogism. The importance of dispositional logic transcends its function as a basis for formalization of commonsense reasoning. Viewed in a broader perspective, it underlies the remarkable human ability to make rational decisions in an environment of uncertainty and imprecision.